TECHNICAL NOTES

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Log Grades of Iowa Timber

Iowa has long been a source of quality logs for the manufacture of veneer, cooperage, and high-grade lumber. Until the completion of the forest survey no statistically reliable estimates of the log grade distribution in the present stand were available.

Field work for the survey was done in 1953-54 by the U. S. Forest Service in cooperation with the State Conservation Commission and the Iowa Agricultural Experiment Station. Field crews measured and graded sample trees on over 700 random plots throughout the state. Preliminary results showed a relatively small proportion of high-grade logs in the preferred species.

Statewide, 12 percent of merchantable volume is in grade 1 logs, 18 percent in grade 2, 34 percent in grade 3, and 36 percent in the tie and timber grade. Grade 1 logs include veneer stock, and yield on the average at least 65 percent No. 1 common and better lumber; grade 2 logs at least 40 percent; and grade 3 logs less than 25 percent. Tie and timber logs are too knotty for factory lumber but are sound enough for uses where strength is important.

American elm, cottonwood, and black walnut contain more high-grade volume than the average (see table 1 on back of sheet). So do several less common species. The oaks which make up about one-third of the sawlog volume run heavily to low-grade logs, especially the red oaks. White oaks approach the state average but bur oak, partly because of its persistent branches, has less high-grade material than the other white oaks. Very little high-grade hickory is available.

Western Iowa timber has the highest average grade and northeastern Iowa timber the lowest (table 2). This reflects a condition common in the midwest--in areas of better soils and level topography where agriculture is highly profitable, the remaining timber is not subject to pressure and reaches a larger average size. Where land is mostly marginal for field crops, the timber has been cut heavily and often, leaving cull trees and immature stands.

Trees have to reach a certain size before they contain high-grade logs. Three-fourths of the Iowa grade 1 volume is in trees 20 inches and over d.b.h.; less than 2 percent is in the 12-to 14-inch diameter class. More than half of the grade 2 volume is in 20-inch and larger trees. Looking at it another way, however, more than half of the volume in 20-inch and larger trees is in the number 3 and tie-and-timber grades. These large trees have little chance to improve in quality and should be removed.

MAINTAINED AT ST. PAUL 1, MINNESOTA, IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA

Table 1.--Merchantable sawlog volume by log grade for major hardwood species, Iowa, 1954

Species group	Volume in sample	Log grades: All grades	No. 1	No. 2	No. 3	Tie and timber
	Bd. ft.	Percent	Percent	Percent	Percent	Percent
American elm	35,329	100	14	20	38	28
Cottonwood	16,396	100	28	20	28	24
Silver maple	14,162	100	9	16	34	41
Bur oak	10,948	100	-	22	14	64
Other wh. oaks	19,423	100	5	22	30	43
Red oaks	28,328	100	3	11	38	48
Hickory	6,815	100	-	5	48	47
Black walnut	5,808	100	17	27	50	6
All other hdwds.	33,278	100	14	25	33	28
All hardwoods	170,507	100	12	18	34	36

Table 2.--Merchantable hardwood sawlog volume by log grade for three subdivisions of Iowa, 1954

(In percent)

Subdivision	Log grades: All grades	No.1	No.2	No.3	Tie and timber
Northeast Iowa	100	8	16	40	36
Southeast Iowa	100	12	16	30	42
West Iowa	100	17	24	29	30
Entire state	100	12	18	34	36

Table 3.--Merchantable hardwood sawlog volume by log grade for three diameter groups, Iowa - 1954

(In percent)

DBH class (inches)	Log grades: All grades	No.1	No.2	No.3, tie and timber
	Distribution within log grade:			
12-14	32	1	11	42
16-18	28	24	37	27
20+	40	75	52	31
Total	100	100	100	100
	Distribution within diameter group:			
10-14	100	1	6	93
16-18	100	9	23	68
20+	100	21	23	56
All trees	100	12	18	70